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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/910,477	07/20/2001	Andrew S. Wright	DATUMTE.008A	1633

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EXAMINER	
TRAN, KHANH C	

ART UNIT	PAPER NUMBER
2631	

DATE MAILED: 02/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/910,477	WRIGHT ET AL.	
	Examiner	Art Unit	
	Khanh Tran	2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 July 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-7 and 10-34* is/are allowed.

6)☒ Claim(s) *8 and 9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 July 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *02/05/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thron et al. U.S. Patent 6,304,140 B1.

Regarding claim 8, in column 6 line 65 via column 7 line 31, Thron et al. teaches an embodiment of system 300 in figure 7. The embodiment in figure 7 is similar to that of figure 5, except in addition to generate amplitude correction α, scaling circuit 707 generates a phase correction factor β that provides a correction factor for the amplitude LUTs. Referring to figure 7, system 300 includes adaptive control mechanisms to modify the predistortion of input signal 301 to adjust for deviations in amplifier 328, shown in figure 5 also. System 300 includes scaling circuit 707 that receives three inputs respectively as shown in figure 7. The scaling circuit 707 receives a feed-forward input via line 510, wherein the feed-forward input is coupled to the input data stream 301 (also shown in figure 5), and a feedback input via line 514 (also shown in figure 5), coupled to the output of amplifier 328. In view of the foregoing disclosure, the recited scaling circuit 707 corresponds to the claimed adaptive control circuit and the system 300 corresponds to the claimed digital waveshaping circuit.

Referring to figure 7, scaling circuit 707 further has an environment sensor input through line 514 to the environment sensor 513, line 514 and the environment sensor 513 are disclosed with respect to figure 5. Because environment sensor implementation is suitable for generating compensation factors α β as a function of temperature, environment sensor 513 provides a reference input to scaling circuit 707 for generating a pair of scaling factors α β to compensate for temperature dependent variations in phase distortion as well as amplitude distortion. In this manner, the embodiment of system 300 depicted in figure 7 is enabled to adapt or adjust look-up table values in response to changes in amplification of amplifier 328 with respect to figure 5.

Thron et al. does not expressly teach an input monitoring circuit adapted to monitor the at least one input symbol stream as set forth in the claim. Referring to figure 7 again, in column 7, lines 10-30, scaling circuit 707 receives a feed-forward input via line 510. The feed-forward input is coupled to a baseband input 301, corresponding to the claimed at least one input symbol stream. The act of receiving and utilizing the feed-forward input as part of generating scaling factors is equivalent to monitoring for changes on the feed-forward input. In view of the foregoing, it would have been obvious for one of ordinary skill in the art at the time the invention was made that scaling circuit 707 includes a means for receiving the feed-forward input and applying the changes to the correction scaling factors. As recited above, the act of receiving the feed-forward input and applying the changes in part to the correction scaling factors is

equivalent to monitoring the feed-forward input. The recited means corresponds to the claimed input monitoring circuit.

Thron et al. does not expressly teach a receiver circuit adapted to monitor the output sample stream as set forth in the claim. Referring to figure 7 again, in column 7, lines 10-30, scaling circuit 707 receives a feedback input via line 514, as shown in figure 5. Using analogous reasoning as recited above, the feedback input via line 514 is coupled to the output of amplifier 328 through a FFT 516. The act of receiving and utilizing the feedback input as part of generating scaling factors is equivalent to monitoring for changes on the feedback input. In view of the foregoing, it would have been obvious for one of ordinary skill in the art at the time the invention was made that scaling circuit 707 includes a means for receiving the feedback input and applying the changes in part to the correction scaling factors. As recited above, the act of receiving the feed-forward input and applying the changes to the correction scaling factors is equivalent to monitoring the feedback input, which corresponds to the output sample stream. The recited means corresponds to the claimed receiver circuit.

Thron et al. does not expressly teach a parameter update circuit adapted to calculate and to provide updated parameters as set forth in the claim. Referring to figure 7 again, in column 7, lines 1-30, scaling circuit 707 generates a pair of correction factors α β based upon the feed-forward input, coupled to the input baseband signal 301, a feedback input, coupled to the output data stream, and the environment sensor input, corresponding to the claimed reference input.

Using analogous reasoning as recited above, it would have been obvious for one of ordinary skill in the art at the time the invention was made that scaling circuit 707 includes a computation of scaling circuit for generating an amplitude correction factor and a phase correction factor for updating look-up table values in response to changes in amplification of amplifier 328 to compensate for temperature dependent variations in phase distortion as well as amplitude distortion. The pair of correction factors α β are generated based upon the feed-forward input, coupled to the input baseband signal 301, a feedback input, coupled to the output data stream, and the environment sensor input, corresponding to the claimed reference input.

Regarding claim 9, Thron et al. does not teach scaling circuit 707 calculated the updated parameters in non real time. A recited above, scaling circuit 707 receives an environment sensor input via line 509, shown in figure 5. Since it is more accurate representation of the environment temperature by averaging the sensor readings over a period of time instead of utilizing instantaneous readings, one of ordinary skill in the art at the time the invention was made would have been motivated to take average readings of environment data instead of utilizing instantaneous readings to update data. As result of that, scaling circuit 707 calculates correction factors in non real time due to the act of averaging the sensor readings over a period of time. The motivation for updating parameters in non real time is obvious because the average readings over a period of time would be a more correct representation of temperature change of the

environment instead of using an instantaneous value. The instantaneous values would be affected by temperature fluctuations.

Allowable Subject Matter

2. Claims 1-7 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 1, claim 1 is allowable over the prior art of record since the cited references taken individually or in combination fails to particularly disclose a waveshaping circuit that shapes a first waveform to decrease a ratio of peak power to average power in the first waveform such that an available power of a radio frequency power amplifier can be efficiently used, the waveshaping circuit comprises "*a preconditioning circuit adapted to receive an input symbol stream, a pulse generator adapted to receive the upconverted signal and to receive phase information from the digital numerically controlled oscillator, configured as set forth in the application claim*". It is noted the closest prior art, Thron et al. (US 6,304,140 B1) and Tapio et al. (US 6,741,663 B1) discloses linearization method for amplifier and amplifier arrangement. However, Thron et al. (US 6,304,140 B1) and Tapio et al. fail to anticipate or render the above underlined limitations obvious.

3. Claims 10-15 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 10, claim 10 is allowable over the prior art of record since the cited references taken individually or in combination fails to particularly disclose a preconditioning circuit adapted to reduce an amplitude of a signal peak in an input symbol stream in real time, the preconditioning circuit comprises "*elements configured as set forth in the application claim*". It is noted the closest prior art, Thron et al. (US 6,304,140 B1) and Tapio et al. (US 6,741,663 B1) discloses linearization method for amplifier and amplifier arrangement. However, Thron et al. (US 6,304,140 B1) and Tapio et al. fail to anticipate or render the above underlined limitations obvious.

4. Claim 16 is allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 16, claim 16 is allowable over the prior art of record since the cited references taken individually or in combination fails to particularly disclose a digital waveshaping circuit that decreases an amplitude of a selected portion of a composite multicarrier signal in real time, the digital waveshaping circuit comprises "*means for performing the steps as set forth in the application claim*". It is noted the closest prior art, Thron et al. (US 6,304,140 B1) and Tapio et al. (US 6,741,663 B1) discloses linearization method for amplifier and amplifier arrangement. However, Thron et al. (US 6,304,140 B1) and Tapio et al. fail to anticipate or render the above underlined limitations obvious.

5. Claims 17-23 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 17, claim 17 is allowable over the prior art of record since the cited references taken individually or in combination fails to particularly disclose a method of shaping a first waveform to decrease a ratio of peak power to average power in the first waveform by digitally modifying data in a data stream that gives rise to the first waveform, the method comprising "*the steps performing tasks as set forth in the application claim*". It is noted the closest prior art, Thomson (US 6,130,916), discloses a method and apparatus for improving a transmission data rate of baseband data in a wireless network. However, Thomson (US 6,130,916) fails to anticipate or render the above underlined limitations obvious.

6. Claims 24-27 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 24, claim 24 is allowable over the prior art of record since the cited references taken individually or in combination fails to particularly disclose a method of adaptively controlling a digital waveshaping process, the method comprising "*the steps performing tasks as set forth in the application claim*". It is noted the closest prior art, Thomson (US 6,130,916), discloses a method and apparatus for improving a

transmission data rate of baseband data in a wireless network. However, Thomson (US 6,130,916) fails to anticipate or render the above underlined limitations obvious.

7. Claims 28-34 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 28, claim 28 is allowable over the prior art of record since the cited references taken individually or in combination fails to particularly disclose a method of digitally precondirioning an input symbol stream to a pulse shaping filter in real time, the method comprising "*the steps performing tasks as set forth in the application claim*". It is noted the closest prior art, Thomson (US 6,130,916), discloses a method and apparatus for improving a transmission data rate of baseband data in a wireless network. However, Thomson (US 6,130,916) fails to anticipate or render the above underlined limitations obvious.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Thomson U.S. Patent 6,130,916 discloses "A method and apparatus for Improving a Transmission Data Rate of Baseband Data in a Wireless Network".

Mc Gowan et al. U.S. Patent 6,236,864 discloses "CDMA Transmit Peak Power Reduction".

Tapio U.S. Patent 6,741,663 B1 discloses "Linearization Method For Amplifier, And Amplifier Arrangement".

Schenk U.S. Patent 6,529,925 B1 discloses "A Method for Reducing The Crest Factor of A signal".

Lundh U.S. Patent 6,765,899 B1 discloses "A Method and An Apparatus for Clipping Signals In A CDMA System".

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Tran whose telephone number is 571-272-3007. The examiner can normally be reached on Monday - Friday from 08:00 AM - 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KCT

Khanh cong Tran 02/05/2005
Examiner KHANH TRAN